

INDEX TO VOLUME 6

Authors

A		G		Manning, W. P.	
Abbrecht, Peter H.	268	Garner, F. H.	579	Manogue, W. H.	494
Abraham, William H.	257	Gates, David S.	50	Marshall, W. R., Jr.	9
Acrivios, Andreas	312, 410, 584	Gauvin, W. H.	29, 184	Martin, Joseph J.	43, 318
Adler, S. B.	104	Gealer, Roy L.	501	Martini, William R.	251
B		Geankoplis, C. J.	591	Massimilla, Leopoldo	134
Barker, James J.	289	George, H. H., Jr.	406	McAllister, R. A.	427
Bartok, William	685	Gill, William N.	139	McCarter, R. J.	197, 390
Bathish, L. N.	693	Gomezplata, Albert	454	McDonough, J. A.	615
Baumgarten, P. K.	115	Gordon, Kenneth F.	505	McKelvey, James M.	706
Beckmann, R. B.	359	Gorgas, Walter E.	128	Metzner, A. B.	109, 432
Bennett, C. O.	67, 257	Gose, Earl E.	168	Mitsis, George J.	505
Berry, V. J., Jr.	274	Grieves, Robert B.	561	Morrison, Richard B.	92
Bingeman, J. B.	58	Griskey, Richard G.	128	Motard, R. L.	39
Bird, R. Byron	516, 551	Grove, C. S., Jr.	139	Moyle, Morton P.	92
Bliss, Harding	510	Gutoff, Edgar B.	347	Mugele, R. A.	3
Bloomer, Oscar T.	240	Gutterman, Bernard	124	Myers, J. E.	34, 83
Bolles, T. V.	406	H		N	
Bondi, A.	191, 3D	Hamielec, A. E.	145	Nissan, A. H.	406, 606
Brasket, C. J.	67	Hanratty, Thomas J.	325, 624	Norwood, K. W.	432
Brinkley, W. K.	446, 451	Hansen, David	606	O	
Brown, George Martin	179	Happel, John	55, 129	Olander, Donald R.	233, 346
Burchard, John K.	202	Harmathy, Tibor Z.	281	Organick, E. I.	39
C		Harriott, Peter	528, 708	Othmer, Donald F.	210, 3D
Cairns, E. J.	400, 554	Hashinger, Richard F.	220	Otto, Frederick D.	602
Canjar, Lawrence N.	128	Hawthorn, R. D.	443	Owens, E. James	676
Carberry, James J.	460	Hay, J. M.	373	P	
Carter, W. B.	611	Heath, Carl E.	685	Pabbi, V. R.	318
Case, L. C.	171, 705	Himmelblau, D. M.	619	Padyhe, R. R.	343
Chao, K. C.	214	Hoffman, J. M.	579	Peck, Ralph E.	240
Charlesworth, D. H.	9	Hoffman, Robert F.	321	Penney, W. H.	394
Chennakesavan, Balapa	246	Holland, C. D.	615	Pennay, W. H.	394
Chiang, S. H.	539	Hsu, Hsien-Wen	516, 551	Petersen, E. E.	312, 488
Churchill, Stuart W.	92, 251, 268, 501	Huckaba, Charles E.	335	Pfeffer, Robert	129
Coates, Jessie	58	Hwa, C. S.	359	Pigford, R. L.	104, 115, 494
Cole, Robert	533	J		Piret, E. L.	394, 574
Converse, A. O.	344	Jaffer, J. H., Jr.	510	Plebuch, Richard R.	505
Cooper, H. R.	595	Jelinek, Robert V.	139	Prausnitz, J. M.	78, 214, 400, 554, 611
Cornish, Raymond M.	150	Johnson, A. I.	145, 373	Press, Stanley	174
D		Johnstone, H. F.	648	R	
Danley, Donald E.	335	Jones, Herbert L., Jr.	332	Ranz, W. E.	124
Deans, H. A.	656, 663	Jontz, P. D.	34	Rase, Howard F.	343
De Maria, Francesco	473	K		Redlich, Otto	173
De Nevers, Noel	43	Kada, Hisao	325, 624	Robinson, Donald B.	602
Dlouhy, Jan	29	Knudsen, J. G.	669	Robinson, R. G.	469
Dodds, W. S.	197, 390	Koeller, R. C.	274	Rosselli, G. M.	104
Doolittle, Arthur K.	150, 153, 157	Kunii, Daizo	71, 97, 543	S	
Doolittle, Dortha B.	153, 157	Kunin, Robert	640	Sage, B. H.	163, 693
Dukler, A. E.	463	Kuo, Mau-Tong	566	Schechter, Robert S.	170
E		Kurata, Fred	415, 547	Schotte, William	63
Eakin, Bert E.	438	Kurihara, H. M.	83	Schowalter, W. R.	24, 648
Edmister, W. C.	214	L		Shah, M. J.	312
Efferding, L. E.	419	Laddha, G. S.	355	Short, W. W.	163
Elgin, J. C.	321	Lamb, D. E.	682	Shulman, H. L.	174, 469
Ellington, Rex T.	438	Lapidus, Leon	321, 656, 663	Shuster, W. W.	454
Engel, F. C.	262	Lee, K. S.	669	Simon, Ivan	150
F		Liles, A. W.	591	Simkin, D. J.	191, 3D
Fan, Liang-Tseng	482	Lohrenz, John	415, 547	Sleicher, C. A., Jr.	529
Fayon, A. M.	55	Longmire, David R.	304	Smith, Buford D.	446, 451
Flint, Duane L.	325	Lynn, Scott	703	Smith, Charles H.	569
Forman, J. Charles	206	M		Smith, J. M.	71, 299
Friend, Leo	104	Maloney, J. O.	382	Sobotik, R. H.	619
Frisch, Norman W.	640	Manning, F. S.	682	Sollami, B. J.	197, 390
Frohlich, Gerhard J.	210, 3D	N		Starling, Kenneth E.	438

INDEX TO VOLUME 6

Authors

A		G		Manning, W. P.	
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Abraham, William H.	257	Gates, David S.	50	Marshall, W. R., Jr.	9
Acrivios, Andreas	312, 410, 584	Gauvin, W. H.	29, 184	Martin, Joseph J.	43, 318
Adler, S. B.	104	Gealer, Roy L.	501	Martini, William R.	251
B		Geankoplis, C. J.	591	Massimilla, Leopoldo	134
Barker, James J.	289	George, H. H., Jr.	406	McAllister, R. A.	427
Bartok, William	685	Gill, William N.	139	McCarter, R. J.	197, 390
Bathish, L. N.	693	Gomezplata, Albert	454	McDonough, J. A.	615
Baumgarten, P. K.	115	Gordon, Kenneth F.	505	McKelvey, James M.	706
Beckmann, R. B.	359	Gorgas, Walter E.	128	Metzner, A. B.	109, 432
Bennett, C. O.	67, 257	Gose, Earl E.	168	Mitsis, George J.	505
Berry, V. J., Jr.	274	Grieves, Robert B.	561	Morrison, Richard B.	92
Bingeman, J. B.	58	Griskey, Richard G.	128	Motard, R. L.	39
Bird, R. Byron	516, 551	Grove, C. S., Jr.	139	Moyle, Morton P.	92
Bliss, Harding	510	Gutoff, Edgar B.	347	Mugele, R. A.	3
Bloomer, Oscar T.	240	Gutterman, Bernard	124	Myers, J. E.	34, 83
Bolles, T. V.	406	H		N	
Bondi, A.	191, 3D	Hamielec, A. E.	145	Nissan, A. H.	406, 606
Brasket, C. J.	67	Hanratty, Thomas J.	325, 624	Norwood, K. W.	432
Brinkley, W. K.	446, 451	Hansen, David	606	O	
Brown, George Martin	179	Happel, John	55, 129	Olander, Donald R.	233, 346
Burchard, John K.	202	Harmathy, Tibor Z.	281	Organick, E. I.	39
C		Harriott, Peter	528, 708	Othmer, Donald F.	210, 3D
Cairns, E. J.	400, 554	Hashinger, Richard F.	220	Otto, Frederick D.	602
Canjar, Lawrence N.	128	Hawthorn, R. D.	443	Owens, E. James	676
Carberry, James J.	460	Hay, J. M.	373	P	
Carter, W. B.	611	Heath, Carl E.	685	Pabbi, V. R.	318
Case, L. C.	171, 705	Himmelblau, D. M.	619	Padyhe, R. R.	343
Chao, K. C.	214	Hoffman, J. M.	579	Peck, Ralph E.	240
Charlesworth, D. H.	9	Hoffman, Robert F.	321	Penney, W. H.	394
Chennakesavan, Balapa	246	Holland, C. D.	615	Pennay, W. H.	394
Chiang, S. H.	539	Hsu, Hsien-Wen	516, 551	Petersen, E. E.	312, 488
Churchill, Stuart W.	92, 251, 268, 501	Huckaba, Charles E.	335	Pfeffer, Robert	129
Coates, Jessie	58	Hwa, C. S.	359	Pigford, R. L.	104, 115, 494
Cole, Robert	533	J		Piret, E. L.	394, 574
Converse, A. O.	344	Jaffer, J. H., Jr.	510	Plebuch, Richard R.	505
Cooper, H. R.	595	Jelinek, Robert V.	139	Prausnitz, J. M.	78, 214, 400, 554, 611
Cornish, Raymond M.	150	Johnson, A. I.	145, 373	Press, Stanley	174
D		Johnstone, H. F.	648	R	
Danley, Donald E.	335	Jones, Herbert L., Jr.	332	Ranz, W. E.	124
Deans, H. A.	656, 663	Jontz, P. D.	34	Rase, Howard F.	343
De Maria, Francesco	473	K		Redlich, Otto	173
De Nevers, Noel	43	Kada, Hisao	325, 624	Robinson, Donald B.	602
Dlouhy, Jan	29	Knudsen, J. G.	669	Robinson, R. G.	469
Dodds, W. S.	197, 390	Koeller, R. C.	274	Rosselli, G. M.	104
Doolittle, Arthur K.	150, 153, 157	Kunii, Daizo	71, 97, 543	S	
Doolittle, Dortha B.	153, 157	Kunin, Robert	640	Sage, B. H.	163, 693
Dukler, A. E.	463	Kuo, Mau-Tong	566	Schechter, Robert S.	170
E		Kurata, Fred	415, 547	Schotte, William	63
Eakin, Bert E.	438	Kurihara, H. M.	83	Schowalter, W. R.	24, 648
Edmister, W. C.	214	L		Shah, M. J.	312
Efferding, L. E.	419	Laddha, G. S.	355	Short, W. W.	163
Elgin, J. C.	321	Lamb, D. E.	682	Shulman, H. L.	174, 469
Ellington, Rex T.	438	Lapidus, Leon	321, 656, 663	Shuster, W. W.	454
Engel, F. C.	262	Lee, K. S.	669	Simon, Ivan	150
F		Liles, A. W.	591	Simkin, D. J.	191, 3D
Fan, Liang-Tseng	482	Lohrenz, John	415, 547	Sleicher, C. A., Jr.	529
Fayon, A. M.	55	Longmire, David R.	304	Smith, Buford D.	446, 451
Flint, Duane L.	325	Lynn, Scott	703	Smith, Charles H.	569
Forman, J. Charles	206	M		Smith, J. M.	71, 299
Friend, Leo	104	Maloney, J. O.	382	Sobotik, R. H.	619
Frisch, Norman W.	640	Manning, F. S.	682	Sollami, B. J.	197, 390
Frohlich, Gerhard J.	210, 3D	N		Starling, Kenneth E.	438

Stuart, Edward B.	332
Stutzman, L. F.	197, 390
Swift, G. W.	415, 547
T	
Talandis, G. R.	124
Taylor, J. S.	109
Thaller, Lawrence H.	369
Thodos, George	
50, 206, 364, 369, 561, 569, 676	
Thomas, D. G.	631
Tien, Chi	364
Tierney, J. W.	67
Tiller, F. M.	595

Toome, W. J.	615
Toor, H. L.	202, 525, 539
Trambouze, P. J.	394, 574
Treybal, Robert E.	227, 289
V	
Valleroy, V. V.	382
Vanek, Richard P.	139
Venkataraman, Gopal	
355	
Vilbrant, F. C.	296
W	
Wakao, Noriaki	543
Weber, H. C.	171, 705

Weisman, Joel	262, 419
Weiss, Malcom A.	685
Wen, Chin-Yung	220, 482
Westwater, J. W.	134
White, Robert R.	473
Whitehouse, W. G.	174
Wicks, Moye, III	463
Wilhelm, R. H.	682
Wissler, Eugene H.	170
Woodle, H. A., Jr.	296
Y	
Yagi, Sakae	97, 543
Yang, Yung-Chia	482

Subject Index

A	
Absorption of phosgene into water and aqueous solutions, the kinetics of the	494
Acceleration of the Surface of a Falling Film, The	703
Acetonitrile-acetaldehyde system, second virial coefficients of	611
Activity levels in a reactor-regenerator system, on the steady state	488
Adsorption, interfacial, mass transfer with methyl chloride into water liquid-phase, correlating criteria for	539
Agitated liquids, mass transfer coefficients for solids suspended in vessels, flow patterns in and mixing rates in	109
Air oxidation of nitric oxide with silica gel	510
Air-water in horizontal flow	463
Aliphatic hydrocarbons, unsaturated, vapor pressure	569
gaseous, and their derivatives at moderate pressures	676
Alkane, -n, compression of liquids critical evaluation of new data: n-heptane to n-tetracontane ..	153
Ammonium nitrate-water system, correlating vapor pressures and heats of solutions of	210, 3D
Application of Boundary-Layer Theory to Power-Law Pseudoplastic Fluids: Similar Solutions	24
Aqueous solutions, kinetics of absorption of phosgene into	494
Axial Diffusion of Liquids in Packed Beds and End Effects	591
dispersion, the effect of velocity profile on, in packed beds	344
effective thermal conductivities in packed beds, studies on	543
mixing in pipes, effect of radial temperature variation on	443
B	
Batch and continuous-flow chemical reaction systems dilute case, extractive reaction	394
Batch rectification, binary, calculation procedures for	335
Beds, fixed, boundary-layer model of fluid-particle mass transfer in ..	460
packed, axial diffusion of liquids in and end effects	591
studies on axial effective thermal conductivities in	543
semifluidized, mass transfer in for solid-liquid system	482
thermal conductivity of packed ..	63
Beds of small spheres, centrifugal filtration through	58

Binary gaseous systems, diffusion in compressed	274
systems, the critical temperatures and pressures of: hydrocarbons of all types and hydrogen	561
Boiling coefficients, the effects of superheat and surface roughness on	83
nucleate, the effect of dynamic surface tension on	34
Book Reviews	
Chemical Process Principles, Part II, Thermodynamics	2J
Proceedings of an International Symposium on High Temperature Technology	2D
Principles of Unit Operations ...	5D
Boundary, cylindrical, effect of on a fixed rigid sphere in a moving viscous fluid	55
Boundary flows about spheres, temperature distribution in	693
Boundary-Layer Model of Fluid-Particle Mass Transfer in Fixed Beds, A	460
Boundary-Layer, laminar, flows of non-Newtonian fluids past external surfaces, momentum and heat transfer in	312
mass transfer in flows with finite interfacial velocities	410
theory, the application of to power-law pseudoplastic fluids: similar solutions	24
Bubbles, and large drops, velocity of in media of infinite or restricted extent	281
Burning Rates of Solid Propellants	299
C	
Cakes formed in filters and centrifuges, comparison of specific resistances of	382
Calculation of Equilibrium Flash Vaporization Curves by an Integration Method	67
Calculation Procedures for Binary Batch Rectification	335
Carbon dioxide-argon mixtures, the compressibility of	257
Catalyst bed, heat transfer and kinetics in, of rectangular cross section	510
Catalysts, design of: application of crystal-face orientation	343
Catalytic cracking of cumene, effect of uniformity fluidization on ..	454
reaction, the dual nature of: the dehydrogenation of sec-butyl alcohol to methyl ethyl ketone at elevated pressures	369
Centrifugal Filtration Through Beds	

of Small Spheres	58
Centrifuges, comparison of specific resistances of cakes formed in	382
Characteristics of the Mean Flow Patterns and Structure of Turbulence in Spiral Gas Streams	648
Chemical-reaction systems, concentrated case extractive reaction: batch- and continuous-flow ...	574
dilute case, batch and continuous flow, extractive reaction	394
Comparison of the Specific Resistances of Cakes Formed in Filters and Centrifuges	382
Compressibility of Carbon Dioxide-Argon Mixtures, The	257
Compressibility and Vapor Pressure of Methyl Borate	128
Compression of Liquids, Apparatus, and Method of Measurement ..	150
Compression of Liquids, Critical Evaluation of New n-Alkane Data: n-Heptane to n-Tetracontane	153
Compression of Liquids, Temperature, and Molecular Weight Dependence of the Huddleston Parameters for the n-Alkanes ...	157
Computational Model for Predicting and Correlating the Behavior of Fixed-Bed Reactors, A: I. Derivation of Model for Nonreactive Systems	656
Computational Model for Predicting and Correlating the Behavior of Fixed-Bed Reactors, A: II. Extension to Chemically Reactive Systems	663
Concurrent Gas Absorption Mass Transfer	197
Condensation, mass transfer in ..	706, 708
Conduit, circular or flat, heat or mass transfer in a fluid in laminar flow	179
Constant-Volume Heat Capacities of Gaseous Perfluorocyclobutane and Propylene, The	43
Continuous-Throughput Rectification of Organic Liquid Mixtures with Thermal-Diffusion Columns ...	304
Convection, natural, inside a horizontal cylinder	251
Correlating Criteria for Liquid-Phase Adsorption	332
Correlating Vapor Pressures and Heats of Solution for the Ammonium-Nitrate Water System	210, 3D
Corresponding-States Correlation for Higher Molecular-Weight Liquids, A	191, 3D
Corresponding states for gases, modified law of	240

Critical Constants of the Elements, The	50	Effect of Radial Temperature Variation on Axial Mixing in Pipes	443	of small spheres	58
Critical Temperatures and Pressures of Binary Systems: Hydrocarbons of All Types and Hydrogen, The	561	Effect of Uniformity of Fluidization on Catalytic Cracking of Cumene	454	role of porosity in: constant pressure filtration	595
Critical Temperatures and Pressures of Organic Compounds	206	Effect of Velocity Profile on Axial Dispersion in Packed Beds	344	Fixed-bed reactors, computational model for predicting and correlating the behavior of: I. derivation of model for nonreactive systems	656
Crystal-face orientation, application of in design of catalysts	343	Effectiveness of Mixing Tanks in Smoothing Cyclic Fluctuations	347	computational model for predicting and correlating the behavior of: II. extension to chemically reactive systems	663
Cyclic fluctuations, the effectiveness of mixing tanks in smoothing	347	Effects of Solids on Turbulence in a Fluid	624	Flow Patterns and Mixing Rates in Agitated Vessels	432
Cylinder drying, heat and mass transfer transients in: I. unfelted cylinders	606	Effects of Superheat and Surface Roughness on Boiling Coefficients, The	83	Flow Patterns in Agitated Vessels	109
natural convection inside a horizontal	251	Efficiencies, a study of sieve-tray	373	Flow, turbulent, the thermal entrance region in fully developed	268
Cylindrical boundary, effect of on a fixed rigid sphere in a moving viscous fluid	55	Efficiency, entrainment and extraction, of mixer-settlers	529	Fluid in laminar flow, heat of mass transfer in a circular or flat conduit	179
D		Elements, the critical constants of Elutriation of Solid Particles From a Dense-Phase Fluidized Bed	220	the motion of two spheres following each other in a	129
Dehumidification, mass transfer rates for at high solute concentrations	469	End effects, axial diffusion of liquids in packed beds and	591	viscous, moving, effect of a cylindrical boundary on a fixed rigid sphere in a	55
Dehydration of <i>sec</i> -butyl alcohol to methyl ethyl ketone at elevated pressures: the dual nature of a catalytic reaction	369	Entrainment and Extraction Efficiency of Mixer-Settlers	529	Fluidization, effect of uniformity of, on catalytic cracking of cumene	454
Dense-fluid, liquid, and gas viscosity of propane	438	Entrainment and Pressure Drop in Concurrent Gas-Liquid Flows: I. Air-Water in Horizontal Flow	463	longitudinal mixing in	400
Density Fluctuations in Fluidized Beds	115	Equation, general short-cut for equilibrium stage processes	446	macroscopic mixing in	554
Design of Catalysts: Application of Crystal-Face Orientation	343	Equilibria, vapor-liquid, hydrocarbon, and solubility parameter	214	solid-gas, photographic study of	134
Detonation Characteristics of Hydrogen-Oxygen Mixtures	92	Equilibrium chemical reaction, simultaneous mass transfer and	233	Fluidized beds, density fluctuations in elutriation of solid particles from a dense-phase	220
Detonation Characteristics of Hydrogen-Oxygen Mixtures at High Initial Pressures	501	data, binary liquid-vapor, thermodynamic consistency of when one component is above its critical temperature	104	systems, the mechanics of vertical moving	321
Diffusion in Compressed Binary Gaseous Systems	274	flash vaporization curves, calculation of by an integration method	67	Formation of Interfacial Area in Immiscible Liquids by Orifice Mixers	615
Diffusion, turbulent, point source in a pipe	325	stage processes, general short-cut equation for	446	G	
Diffusion problems, multicomponent Dispersoids, maximum stable droplets in	516	Estimation of Stage Efficiency of Simple Agitated Vessels Used in Mixer Settler Extractors, Erratum	5M	Gas absorption, concurrent, mass transfer	197
Dissolved solids, evaporation from drops containing	3	Ethane, methane, propane, and <i>n</i> -butane, liquid viscosities for above the normal boiling point	415	pressure drop and liquid holdup in flowing through irrigated packing, transient response study of	390
Distillation, multicomponent, plate efficiencies in	9	Ethylene, reduced state correlation for and its application to gaseous aliphatic hydrocarbons and their derivatives at moderate pressures: thermal conductivity	676	liquid, and dense-fluid viscosity of propane	473
Distribution Function for Oil Mixtures and Polymers	202	Evaporation From Drops Containing Dissolved Solids	9	-liquid flow, concurrent, entrainment and pressure drop in: I. air-water in horizontal flow	438
Droplets, maximum stable, in dispersoids	3	Evaporation, unsteady multicomponent diffusional	551	mixtures, on the separation of in a jet	463
Drops containing dissolved solids, evaporation from	9	Experimentally Verified Theoretical Study of the Falling Cylinder Viscometer, An	547	pseudocritical constants for	171, 705
large, and bubbles, velocity of in media of infinite or restricted extent	281	Extraction efficiency and entrainment of mixer-settlers	529	streams, spiral, characteristics of the mean flow patterns and structure of turbulence in	648
mass transfer inside	145	liquid-liquid, mechanisms by which ultrasonic energy affects transfer rates in	296	Gases, modified law of corresponding states for	240
Drying thick porous bodies during the falling-rate period, mechanism of: III. analytical treatment of macroporous systems	406	problems, multistage, multicomponent, rigorous solution of	451	General Short-Cut Equation for Equilibrium Stage Processes	446
Dual Nature of a Catalytic Reaction, The: The Dehydrogenation of <i>sec</i> -Butyl Alcohol to Methyl Ethyl Ketone at Elevated Pressures	369	Extractive Reaction: Batch- and Continuous-Flow Chemical-Reaction Systems, Concentrated Case	574	H	
E		Extractive Reaction: Batch- and Continuous-Flow Chemical-Reaction Systems, Dilute Case	394	Heat and Mass Transfer in Spray Drying	29
Effect of a Cylindrical Boundary on a Fixed Rigid Sphere in a Moving Viscous Fluid	55	F		Heat and Mass Transfer to Decelerating Finely Atomized Sprays	184
Effect of Dynamic Surface Tension on Nucleate Boiling Coefficients, The	34	Falling cylinder viscometer, experimentally verified theoretical study of	547	Heat and Mass Transfer Transients in Cylinder Drying: I. Unfelted Cylinders	606
Effect of Plate Wetting Characteristics on Pulse Column Extraction Efficiency, The	619	Filter Cake Washing Performance	566	Heat and mass transfer relationships, simultaneous, internal consistency of	346
		Filters, comparison of specific resistances of cakes formed in	382	Heat and Momentum Transport Characteristics of Non-New-Newtonian Aqueous Thorium Oxide Suspensions	631
		Filtration, centrifugal, through beds		Heat capacities, constant-volume, of gaseous perfluorocyclobutane and propylene	43
				exchanger, tubular, local shell-side heat transfer coefficients and	

pressure drop in with orifice baffles	669	of Linear Equilibrium Relationships	364	rates for dehumidification at high solute concentration: VI. performance of packed columns	469
flux, critical, photographic study of pool boiling in the region of	533	J		relationships, and simultaneous heat, the interfacial consistency of	346
Heat or Mass Transfer in a Fluid in Laminar Flow in a Circular or Flat Conduit	179	Jet-stirred reactor, mixing in a	685	transition from free to forced convection in from solid spheres	579
Heat Transfer and Kinetics in a Catalyst Bed of Rectangular Cross Section: Air Oxidation of Nitric Oxide with Silica Gel	510	Jets, on the separation of gas mixtures in a	168	Mass Transfer Coefficients for Solids Suspended in Agitated Liquids	289
Heat Transfer Characteristics of Porous Rocks	71	K		Mass Transfer From a Solid Soluble Sphere to a Flowing Liquid Stream	227
Heat transfer and momentum, in laminar-boundary-layer flows of non-Newtonian fluids past external surfaces	312	Kinetics, and heat transfer, in a catalyst bed of rectangular cross section: air oxidation of nitric oxide with silica gel	510	Mass Transfer in Condensation	706, 708
coefficients, local shell-side, and pressure drop in a tubular heat exchanger with orifice baffles	669	ion exchange, for systems of linear equilibrium relationships	364	Mass Transfer in Laminar-Boundary-Layer Flows with Finite Interfacial Velocities	410
laminar natural convection, theoretical analysis of to non-Newtonian fluids	584	Kinetics of the Absorption of Phosgene into Water and Aqueous Solutions, The	494	Mass Transfer in Liquid-Lithium Systems	139
Heat Transfer in Cylinders with Heat Generation, Erratum	3J	Kinetics of Mixed-Bed Deionization	640	Mass Transfer in Semifluidized Beds for Solid-Liquid System	482
Heat Transfer in Film Condensation, Communication	528	L		Mass Transfer Inside Drops	145
Heat Transfer to Liquid Streams in a Packed Tube Containing Large Packings	246	Laminar-boundary-layer flows of non-Newtonian fluids past external surfaces, momentum and heat transfer in	312	Mass Transfer with Interfacial Adsorption Methyl Chloride into Water	539
Holdup, limiting velocities, and pressure drop at flooding in packed extraction columns	355	with finite interfacial velocities, mass transfer in	410	Maximum Stable Droplets in Dispersoids	3
liquid, in concurrent gas absorption	390	Laminar flow in a circular or flat conduit, heat or mass transfer in	179	Mean flow patterns, characteristics of and structure of turbulence in spiral gas streams	648
radiological study of and flow distribution in packed gas-absorption columns	359	natural convection heat transfer to non-Newtonian fluids, theoretical analysis of	584	Measurement of Concentration Fluctuations with an Electrical Conductivity Probe	682
Huddleston parameters for the <i>n</i> -alkanes, temperature and molecular weight dependence: compression of liquids	157	Limiting Velocities, Holdup, and Pressure Drop at Flooding in Packed Extraction Columns	355	Mechanics of Particle Bounce	124
Hydrates, study of in the methane-propylene-water system	602	Linear equilibrium relationships, ion exchange kinetics for systems of	364	Mechanics of Vertical Moving Fluidized Systems: IV. Application to Batch-Fluidized Systems with Mixed Particle Sizes, The	321
Hydrocarbons of all types and hydrogen: the critical temperatures and pressures of binary systems	561	Liquid, Gas, and Dense-Fluid Viscosity of Propane	438	Mechanism of Drying Thick Porous Bodies During the Falling-Rate Period: III. Analytical Treatment of Macroporous Systems	406
Hydrocarbon Vapor-Liquid Equilibria and Solubility Parameter	214	Liquid-liquid extraction, mechanisms by which ultrasonic energy affects transfer rates in	296	Mechanisms by Which Ultrasonic Energy Affects Transfer Rates in Liquid-Liquid Extraction	296
Hydrocyclones, miniature, as slurry concentrators	262	Liquid, lithium systems, mass transfer in	139	Methane, liquid viscosities above the normal boiling point for	415
Hydrogen-hydrocarbon mixtures, thermodynamic behavior of	39	Liquid-Side Mass Transfer Coefficients in Packed Towers	174	Methane-propylene-water system, study of hydrates in	602
Hydrogen, hydrocarbons of all types: the critical temperatures and pressures of binary systems	561	Liquid stream, flowing, mass transfer from a solid soluble sphere to a streams, heat transfer to in a packed tube containing large packings	227	Methyl borate, compressibility and vapor pressure of	128
Hydrogen-oxygen mixtures, detonation characteristics of	92	Liquid Viscosities Above the Normal Boiling Point for Methane, Ethane, Propane, and <i>n</i> -Butane	415	chloride, mass transfer with interfacial adsorption into water	539
at high initial pressures, detonation characteristics of	501	Liquids, axial diffusion of in packed beds and end effects	591	ethyl ketone at elevated pressures, the dehydrogenation of <i>sec</i> -butyl alcohol to	369
Hypothetical Standard States and the Thermodynamics of High-Pressure Phase Equilibria	78	Local Shell-Side Heat Transfer Coefficients and Pressure Drop in a Tubular Heat Exchanger with Orifice Baffles	669	Miniature Hydrocyclones as Slurry Concentrates	262
I		Longitudinal Mixing in Fluidization	400	Mixed-bed deionization, kinetics of Mixer-settlers, entrainment and extraction efficiency of	529
Immiscible liquids, formation of interfacial area in by orifice mixers	615	M		Mixers, mechanical, suspension of slurries by	419
Integration method, calculation of equilibrium flash vaporization curves by an	67	Macroporous systems, analytical treatment of	406	Mixing in a Jet-Stirred Reactor	685
Interfacial area, formation of an immiscible liquids by orifice mixers areas, liquid-liquid, a scintillation method for determining	505	Macroscopic Mixing in Fluidization	554	Mixing rates and flow patterns in agitated vessels	432
Internal Consistency of Simultaneous Heat and Mass Transfer Relationships	346	Mass and heat transfer in spray drying	29	tanks, the effectiveness of in smoothing cyclic fluctuations	347
Ion Exchange Kinetics for Systems		transfer, and simultaneous equilibrium chemical reaction	233	Mixtures, liquid, viscosity of	427
		effect of air on condensation coefficients	528	Modified Law of Corresponding States for Gases	240
		gas absorption, concurrent	197	Molecular-weight liquids, a corresponding-states correlation for 191, 3D	
		in fixed beds, a boundary-layer model of fluid-particle	460	Momentum and Heat Transfer in Laminar Boundary-Layer Flows of Non-Newtonian Fluids Past External Surfaces	312
		packed towers, liquid side	174		

Momentum balance, use of in calibrating orifices for flow of gases transport and heat characteristics of non-Newtonian aqueous thorium oxide suspensions	318	Phase equilibria, thermodynamics of high-pressure, and hypothetical standard states	78	Reactor-regenerator system, on the steady-state activity levels in a	488
Motion of Two Spheres Following Each Other in a Viscous Fluid, The	631	Phosgene, kinetics of absorption of into water and aqueous solutions	494	Rectification, calculation procedures for binary batch	335
Multicomponent Diffusion Problems	129	Photographic Study of Pool Boiling in the Region of the Critical Heat Flux, A	533	Reduced state correlation for ethylene and its application to gaseous aliphatic hydrocarbons and their derivatives at moderate pressures: thermal conductivity	676
Multicomponent distillation, plate efficiencies in	202	Photographic Study of Solid-Gas Fluidization	134	Reynolds analogy, multicomponent, and turbulent diffusion	525
N		Pipe, point source turbulent diffusion in a	325	Rigorous Solution of Multicomponent, Multistage Extraction Problems	451
Natural Convection Inside a Horizontal Cylinder	251	Pipes, effect of radial temperature variation on axial mixing in	443	Role of Porosity in Filtration: IV: Constant Pressure Filtration, The	595
Nitric oxide, air oxidation of with silica gel	510	Plate Efficiencies in Multicomponent Distillation	202	S	
Non-Newtonian, aqueous thorium oxide suspensions, heat and momentum transport characteristics of	631	Plate wetting characteristics, effect of on pulse column extraction efficiency	619	Scintillation Method for Determining Liquid-Liquid Interfacial Areas, A	505
fluids past external surfaces, momentum and heat transfer in laminar boundary-layer flows of theoretical analysis of laminar natural convection heat transfer to	312	Point Source Turbulent Diffusion in a Pipe	325	Second Virial Coefficients of the Acetonitrile-Acetaldehyde System	611
O		Pool boiling, photographic study of in the region of the critical heat flux	533	Semifluidized beds for solid-liquid system, mass transfer in	482
On the Separation of Gas Mixtures in a Jet	168	Porosity, role of in filtration: constant pressure filtration	595	Separation of gas mixtures in a jet, on the	168
On the Steady State Activity Levels in a Reactor-Regenerator System	488	Porous bodies, thick, mechanism of drying during the falling-rate period: II. analytical treatment of macroporous systems	406	Sieve-tray, a study of efficiencies	373
Organic compounds, critical temperatures and pressures of	206	rocks, heat transfer characteristics of	71	Silica gel, air oxidation of nitric oxide with	510
liquid mixtures, continuous-through-put rectification of with thermal-diffusion columns	304	Power-law pseudoplastic fluids, application of boundary-layer theory to	24	Simultaneous Mass Transfer and Equilibrium Chemical Reaction	233
Orifice baffles, local shell-side heat transfer coefficients and pressure drop in a tubular heat exchanger	669	Pressure drop and entrainment in concurrent gas-liquid flow	463	Slurries, suspension of by mechanical mixers	419
mixers, formation of interfacial area in immiscible liquids by	615	Pressure Drop and Liquid Holdup in Concurrent Gas Absorption	390	Slurry concentrators, miniature hydrocyclones as	262
Orifices, use of momentum balance in calibrating for flow of gases	318	Pressure drop and local shell-side heat transfer coefficients in a tubular heat exchanger with orifice baffles	669	Solid-gas fluidization, photographic study of	134
P		limiting velocities, and holdup at flooding in packed extraction columns	355	particles, elutriation of from a dense-phase fluidized bed	220
Packed beds, studies on heat transfer near wall surfaces in	97	Pressures and the critical temperatures of binary systems: hydrocarbons of all types and hydrogen	561	soluble sphere, mass transfer from to a flowing liquid stream	227
the effect of velocity profile on axial dispersion in	344	critical, and temperatures of organic compounds	206	spheres, transition from free to forced convection in mass transfer from	579
thermal conductivity of	63	high initial, detonation characteristics of hydrogen-oxygen mixtures at	501	Solids, effects of on turbulence in a fluid	624
columns, extraction, limiting, velocities, holdup, and pressure drop at flooding in	355	Propane, liquid, gas, and dense-fluid viscosity of	438	suspended in agitated liquids, mass transfer coefficients for	289
gas-absorption, radiological study of liquid holdup and flow distribution in	359	liquid viscosities above the normal boiling point for	415	Solubility parameter, hydrocarbon vapor-liquid equilibria and	214
performance of: VI. mass transfer rates for dehumidification at high solute concentrations	469	Propellants, solid, burning rates of	299	Specific resistances, a comparison of cakes formed in filters and centrifuges	382
towers, liquid-side mass transfer coefficients in	174	Propylene, and gaseous perfluorocyclobutane, the constant-volume heat capacities of	43	Sphere, fixed rigid in a moving viscous fluid, effect of cylindrical boundary on	55
tube containing large packings, heat transfer to liquid streams in a	246	Pseudocritical Constants for Gas Mixtures	171, 705	Spheres, the motion of two following each other in a viscous fluid	129
Particle bounce, mechanics of	124	Pseudoplastic fluids, power-law, the application of boundary-layer theory to: similar solutions	24	Spray drying, heat and mass transfer in	29
Perfluorocyclobutane, constant-volume heat capacities of	43	Pulse column extraction efficiency, effect of plate wetting characteristics on	619	Sprays, decelerating finely atomized, heat and mass transfer to	184
Performance of Packed Columns: VI: Mass Transfer Rates for Dehumidification at High Solute Concentrations	469	R		Stage processes, equilibrium, general short-cut equation for	446
Phase Equilibria in Mixtures of Polar and Nonpolar Compounds, Erratum	4J	Radiological Study of Liquid Holdup and Flow Distribution in Packed Gas-Absorption Columns	359	Standard states, hypothetical, and the thermodynamics of high-pressure phase equilibria	78

Studies on Heat Transfer Near Wall Surface in Packed Beds	97	phatic Hydrocarbons and Their Derivatives at Moderate Pressures	676	thermal entrance region in point source in a pipe, diffusion	268
Superheat, effect of on boiling coefficients	83	Thermal-diffusion columns, continuous-throughput rectification of organic liquid mixtures with ..	304		
Surface roughness, effect of on boiling coefficients	83	Thermal Entrance Region in Fully Developed Turbulent Flow, The	268	U	
tension, dynamic, the effect of on nucleate boiling coefficients ...	34	Thermal Transfer in Turbulent Gas Streams: Temperature Distribution in Boundary Flows About Spheres	693	Ultrasonic energy, mechanisms by which affects transfer rates in liquid-liquid extraction	296
Suspension of Slurries by Mechanical Mixers	419	Thermodynamic Behavior of Hydrogen-Hydrocarbon Mixtures ...	39	Unsteady Multicomponent Diffusional Evaporation	551
Symposium Series Abstracts		Thermodynamic Consistency of Binary Liquid-Vapor Equilibrium Data When One Component Is Above Its Critical Temperature	104	Use of Momentum Balance in Calibrating Orifices for Flow of Gases	318
Chemical Engineering Education—Academic and Industrial	3S	Erratum	4J		
Adsorption, Dialysis, and Ion Exchange	176	Thermodynamics, of high-pressure phase equilibria, and hypothetical standard states	78	V	
Nuclear Engineering—Part VI ..	350	Transfer coefficients and corrections for thermocouples in boundary flows, temperature measurements in a spherical field	163	Vapor pressure and compressibility of methyl borate	128
Nuclear Engineering—Part VII ..	351	rates in liquid-liquid extraction, mechanisms by which ultrasonic energy affects	296	Vapor pressures and heats of solution for the ammonium nitrate-water system, correlating ...	210, 3D
Reaction Kinetics and Unit Operations	352	Transient Response Study of Gas Flowing Through Irrigated Packing	473	Vapor Pressures: Unsaturated Aliphatic Hydrocarbons	569
Heat Transfer—Chicago	708	Transition from Free to Forced Convection in Mass Transfer from Solid Spheres, The	579	Velocities, finite interfacial, mass transfer in laminar-boundary-layer flows with	410
System, solid-liquid, mass transfer in semifluidized beds for	482	Translations, Japanese	170	Velocity of Large Drops and Bubbles in Media of Infinite or Restricted Extent	281
		Turbulence, characteristics of the mean flow patterns and structure of in spiral gas streams ..	648	Velocity profile, the effect of on axial dispersion in packed beds	344
T		effects of solids on in a fluid	624	Viscosities, liquid, above the normal boiling point for methane, ethane, propane, and <i>n</i> -butane ...	415
Temperature Measurements in a Spherical Field: Transfer Coefficients and Correction for Thermocouples in Boundary Flows	163	Turbulent Diffusion and the Multicomponent Reynolds Analogy ..	525	Viscosity of Liquid Mixtures, The ..	427
Temperature variation, radial, effect of on axial mixing in pipes ...	443	Turbulent flow fully developed, the		Viscosity of propane, liquid, gas, and dense-fluid	438
distribution in boundary flows about spheres	693			Viscous fluid, the motion of two spheres following each other in a	129
Theoretical Analysis of Laminar Natural Convection Heat Transfer to Non-Newtonian Fluids, A	584				
Thermal conductivities in packed beds, studies on	543			W	
Thermal Conductivity of Packed Beds	63			Water, kinetics of absorption of phosphine into	494
Thermal Conductivity: Reduced State Correlation for Ethylene and Its Application to Gaseous Ali-				mass transfer with interfacial adsorption methyl chloride into	539

COMMUNICATIONS TO THE EDITOR

The Acceleration of the Surface of a Falling Film

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Scriven and Pigford (2) estimated the acceleration of the surface of a liquid film emerging from the feed slot of a wetted-wall column and the effect on the rate of gas absorption of the shifting velocity profile within the film. The authors considered the case of a relatively wide, horizontal slot feeding a vertical column. They assumed that the acceleration of the surface layer of the film was due only to

gravity, neglecting the effects of surface tension and momentum transfer within the film. They then generalized their conclusions to cover all types of wetted-wall columns. It will be shown below that their results represent only an extreme limit, even for the special case which they treated. For the case of a column of the type described in reference 1, in which the slot width is of the same order as the steady state

film thickness and in which the slot is also vertical, data obtained in a model study indicate that the acceleration of the surface of the film takes place in a distance about an order of magnitude smaller than would be estimated from the authors' equation.

The sketch in Figure 1 indicates the generalized problem on which the model study was based. The fluid is in full parabolic (laminar) flow at the